

What is claimed is:

1. A loudspeaker unit for a line array of neighboring, like loudspeaker units held in a plane of alignment, each loudspeaker unit comprising:

a housing;

a planar having length and breadth disposed with respect to the housing to extend lengthwise from near one side of the housing to near an opposite side of the housing in parallel with the plane of alignment; and

a tuned rear chamber disposed behind the planar including a reflection canceling surface defining the back of the tuning chamber; and

a low frequency acoustical driver mounted with respect to the housing.

2. A loudspeaker for a line array as set forth in claim 1, further comprising:

the housing having front and back faces;

a bass-reflex enclosure defined by the housing having a forward directed port through the front face;

the low frequency acoustical driver being positioned in the front face;

the planar being positioned parallel to and in front of the front face; and

an indent in the front face behind the planar forming the tuned rear chamber for the planar.

3. A loudspeaker assembly as claimed in claim 2, further comprising:

parallel sides perpendicular to and connected between the front and back faces; and

the housing having a trapezoidal cross-sectional shape perpendicular to the front and back faces of the housing and parallel to the parallel sides.

4. A loudspeaker assembly as claimed in claim 3, further comprising:

the forward directed port comprising an elongated rectangular passage having varying side to side and top to bottom dimensions to conform to exterior walls of the trapezoidal housing while maintaining a substantially constant cross-sectional area from end to end of the forward directed port.

5. A loudspeaker assembly as claimed in claim 4, further comprising:

the indent comprising two walls intersecting along a line at an angle of between 30 degrees and 60 degrees to form a cavity behind planar, the line formed being parallel to the plane of alignment and spaced from the planar by one quarter of the wavelength of a designed lower frequency limit for output from the planar; and

sound dampening material in the cavity.

6. A loudspeaker assembly as claimed in claim 1, further comprising:

the tuned rear chamber being formed behind the planar by two converging vertical walls intersecting at an angle of between 30 degrees and 60 degrees to form a cavity behind planar, the vertical walls and the planar forming a triangle with the depth of one quarter of the wavelength of a designed lower frequency limit for output from the planar; and

sound dampening material in the cavity.

7. A loudspeaker assembly as claimed in claim 6, wherein the loudspeaker assembly is incorporated in a linear array of a plurality of like loudspeaker assemblies.

8. A loudspeaker assembly as claimed in claim 5, wherein the loudspeaker assembly is incorporated in a linear array of a plurality of like loudspeaker assemblies.

9. Apparatus comprising:

a housing defining an interior space and having first and second sides, the first and second sides being spaced from and parallel to one another and being trapezoidal in shape, each with a base edge positioned at the front of the housing and upper and lower converging sides oriented toward the top and bottom of the housing, a front face positioned between the base edges of the first and second sides, a rear face positioned between edges of the first and second sides opposite the base edges, and a cover and a base positioned respectively between the upper and lower converging edges of the first and second sides such that the cover and base have a maximum spacing with the interior space adjacent the front face and a minimum spacing adjacent the rear face;

an aperture in the front face for a loudspeaker cone;

an elongated port open to the interior space and through the front face, the top and bottom of the elongated port being defined by portions of interior faces of the cover and the base; and

sides to the elongated port which converge from back to front of the port to maintain a constant cross-sectional area in the elongated port from back to front of the port.

10. An apparatus as claimed in claim 9, further comprising:

the elongated port having as one side an interior face of the one of the sides of the housing; and

a second side provided by an interior baffle which diverges from the interior face from front to back to maintain a substantially cross sectional area.

11. An apparatus as claimed in claim 10, further comprising:

an indentation in the front face running from an edge of the front face adjacent the cover

to an edge of the front face adjacent the base and angled to generate a null standing wave over the operating frequency of the planer; and

a planar acoustical transducer positioned over the indentation.

12. An apparatus as claimed in claim 11, further comprising:

sound absorbing material between the planar acoustical transducer and the sides of the indentation.

13. An apparatus as claimed in claim 12, further comprising:

the indentation having first and second intersecting sides having an angle of intersection of between 30 and 60 degrees and a maximum depth from the planar at the point of intersection of one quarter of a wavelength at a lower knee frequency.

14. An apparatus as claimed in claim 13, further comprising:

a low frequency loudspeaker with a cone disposed in the aperture.

15. A multi-transducer loudspeaker assembly for use in a line array, comprising:

a trapezoidal housing;

a low frequency cone woofer mounted with respect to the trapezoidal housing

an acoustically tuned rear chamber indent running in the direction of extension of the line array defined by the trapezoidal housing; and

a planar mounted to the front of the housing over the acoustically tuned rear chamber.

16. A multi-transducer loudspeaker assembly for use in a line array as set forth in claim 15, further comprising:

the trapezoidal housing defining a bass-reflex enclosure;

the trapezoidal housing being narrower at the back than at its front; and

the low frequency cone woofer being mounted in an aperture in a front face of the bass-reflex enclosure.

17. A multi-transducer loudspeaker assembly for use in a line array as set forth in claim 16, further comprising:

a port from the bass-reflex enclosure aligned from back to front of the enclosure with constantly varying width and height and a constant cross sectional area along its entire length.